

## SUPPLEMENTARY MATERIAL

# A practical online tool to estimate antiretroviral coverage for HIV infected and susceptible populations needed to reduce local HIV epidemics

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Running Title: Estimating TasP and PrEP coverage rates to reduce local epidemics

## **Supplementary Tables and Figures Legend.**

**Table S1. Potential impact of combined TasP and PrEP coverage on HIV incidence in San Diego.** A. Number of new infections (NNI) after 1 year. B. Number of new infections (NNI) after 5 years. The number of new HIV infections (NNI) is indicated for each combined scenario of TasP and PrEP intervention. TasP coverage ranged from 0% to 60% (incremented by 10%) and PrEP coverage ranged from 10 to 50% (incremented by 10%); All estimates were made considering an initial population of 56,000, an average of 20 sex acts with casual partners per year, and an average condom use of 60%.

**Table S2. Cumulative costs of TasP and PrEP among MSM in San Diego after one year (A) and after 5 years (B).** The cumulative cost in million USD is indicated for each combined scenario of TasP and PrEP intervention. TasP coverage ranged from 30 to 60% (incremented by 10%) and PrEP coverage ranged from 10 to 50% (incremented by 10%). All estimates were made considering an initial population 56,000, an average of 20 sex acts with casual partners per year, and an average condom use of 60%.

**Table S3. Impact of targeted PrEP based on age among MSM in San Diego (A) and cumulative cost after 5 years (B).** A. Number of new HIV infections after 5 years. B. Cumulative cost after 5 years (in million USD).

**Figure S1. Reported condom use among MSM in San Diego.** Men presenting for testing who reported sex with other men were asked for the frequency of condom use during their receptive and insertive sex acts in four categorical answers: “never”, “sometimes” “mostly”, and “always”

**Figure S2. Age distribution of HIV incidence (red) and male individuals (grey) in San Diego.** Vertical dashed lines indicate the minimum (21 years) and maximum (52 years) of the MSM population associated with 90% of the new HIV infections among MSM in San Diego.

**Figure S3. Cost estimates of TasP (A) and PrEP (B) coverage among MSM in San Diego.**

We considered a yearly cost of TasP and PrEP: 24,000\$ and 10,300\$ respectively and an average number of sexual acts with causal partner of 20/year. The cumulative cost estimates of TasP and PrEP are expressed in million USD\$. Three different levels of TasP coverage (30%, 40% and 50%) and PrEP coverage (20%, 30% and 50%) and colored from light green to dark green. This analysis was based on an initial population size of 56,000 MSM individuals, an HIV prevalence of 20% among MSM, a mean number of sex acts of 10, 20 and 30/year, and 60% condom use.

**Figure S4. Change in the annual cost of combined TasP and PrEP coverage (A) and estimated number of new HIV infections averted among MSM in San Diego (B).** Results are indicated for an average annual number of sex acts with causal partner of 20/year and for PrEP coverage levels of 0%, 30% and 50% respectively. TasP coverage levels are indicated in the circles (30, 40 and 50%)\* the annual cost of TasP would be estimated to decrease after 10 years

**Figure S5. Cost estimates by targeting PrEP to MSM between the ages of 21 and 52 years.**

Costs in million USD are estimated for a PrEP coverage of 20% with an average number of sex acts with causal partner is 20/year.

**Table S1. Potential impact of combined TasP and PrEP coverage on HIV incidence in San Diego.**

A. Number of new infections (NNI) after 1 year.

		PrEP Coverage					
		0%	10%	20%	30%	40%	50%
TasP Coverage	0%	638	593	549	504	459	415
	30%	449	418	386	355	323	292
	40%	383	356	329	302	276	249
	50%	316	294	272	250	228	206
	60%	255	237	219	202	184	166

B. Number of new infections (NNI) after 5 years.

		PrEP Coverage					
		0%	10%	20%	30%	40%	50%
TasP Coverage	0%	3282	3052	2822	2593	2363	2133
	30%	2291	2131	1970	1810	1650	1489
	40%	1947	1811	1674	1538	1402	1265
	50%	1605	1492	1380	1268	1155	1043
	60%	1291	1200	1110	1020	929	839

The number of new HIV infections (NNI) is indicated for each combined scenario of TasP and PrEP intervention. TasP coverage ranged from 0% to 60% (incremented by 10%) and PrEP coverage ranged from 10 to 50% (incremented by 10%); All estimates were made considering an initial population of 56,000, an average of 20 sex acts with casual partners per year, and an average condom use of 60%.

**Table S2. Cumulative costs of TasP and PrEP among MSM in San Diego.**

A. After one year.

		PrEP Coverage					
		0%	10%	20%	30%	40%	50%
TasP Coverage	0%	0	40	79	120	159	199
	30%	99	138	177	217	258	292
	40%	132	171	210	249	288	327
	50%	163	202	241	280	320	358
	60%	191	230	269	308	347	387

B. After 5 years.

		PrEP Coverage					
		0%	10%	20%	30%	40%	50%
TasP Coverage	0%	0	193	388	584	781	979
	30%	535	718	902	1088	1275	1462
	40%	687	870	1053	1238	1422	1608
	50%	821	1004	1188	1373	1558	1743
	60%	930	1114	1299	1485	1670	1857

The cumulative cost in million USD is indicated for each combined scenario of TasP and PrEP intervention. TasP coverage ranged from 30 to 60% (incremented by 10%) and PrEP coverage ranged from 10 to 50% (incremented by 10%). All estimates were made considering an initial population 56,000, an average of 20 sex acts with casual partners per year, and an average condom use of 60%.

**Table S3. Impact of targeted PrEP based on age among MSM in San Diego (A) and cumulative cost after 5 years (B).**

A. Number of new HIV infections after 5 years.

		PrEP Coverage targeted to high-risk MSM by age <sup>#</sup>					
		0%	10%	20%	30%	40%	50%
TasP Coverage	0%	3282	3075	2868	2662	2455	2248
	30%	2291	2147	2002	1858	1714	1569
	40%	1947	1824	1702	1579	1456	1334
	50%	1605	1504	1402	1301	1200	1099
	60%	1291	1209	1128	1047	965	884

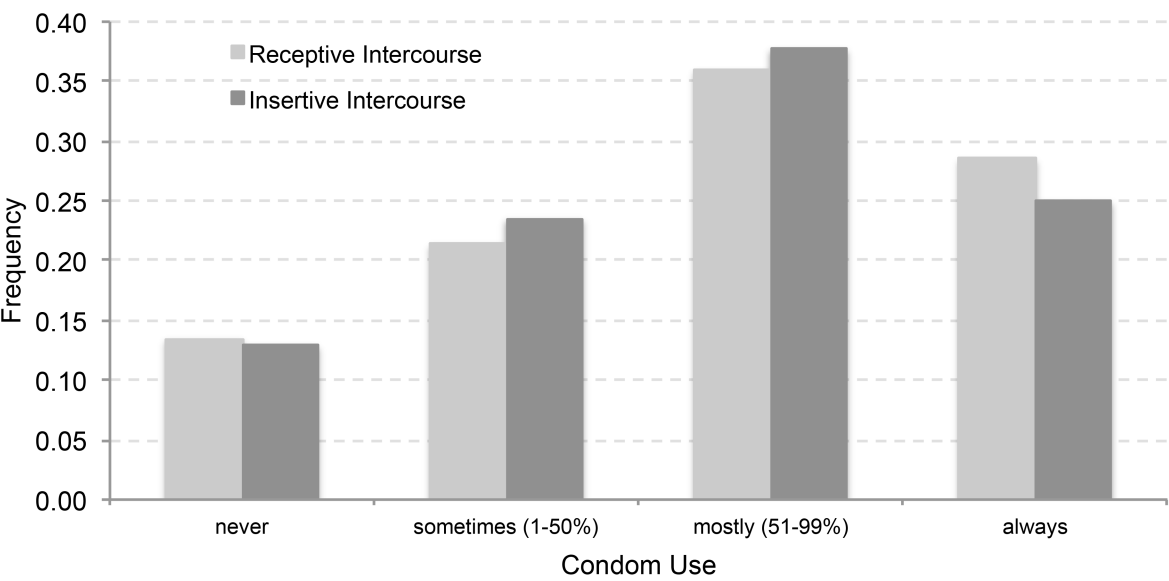
The number of new HIV infections (NNI) is indicated for combined coverage of TasP and targeted PrEP.

B. Cumulative cost after 5 years (in million USD).

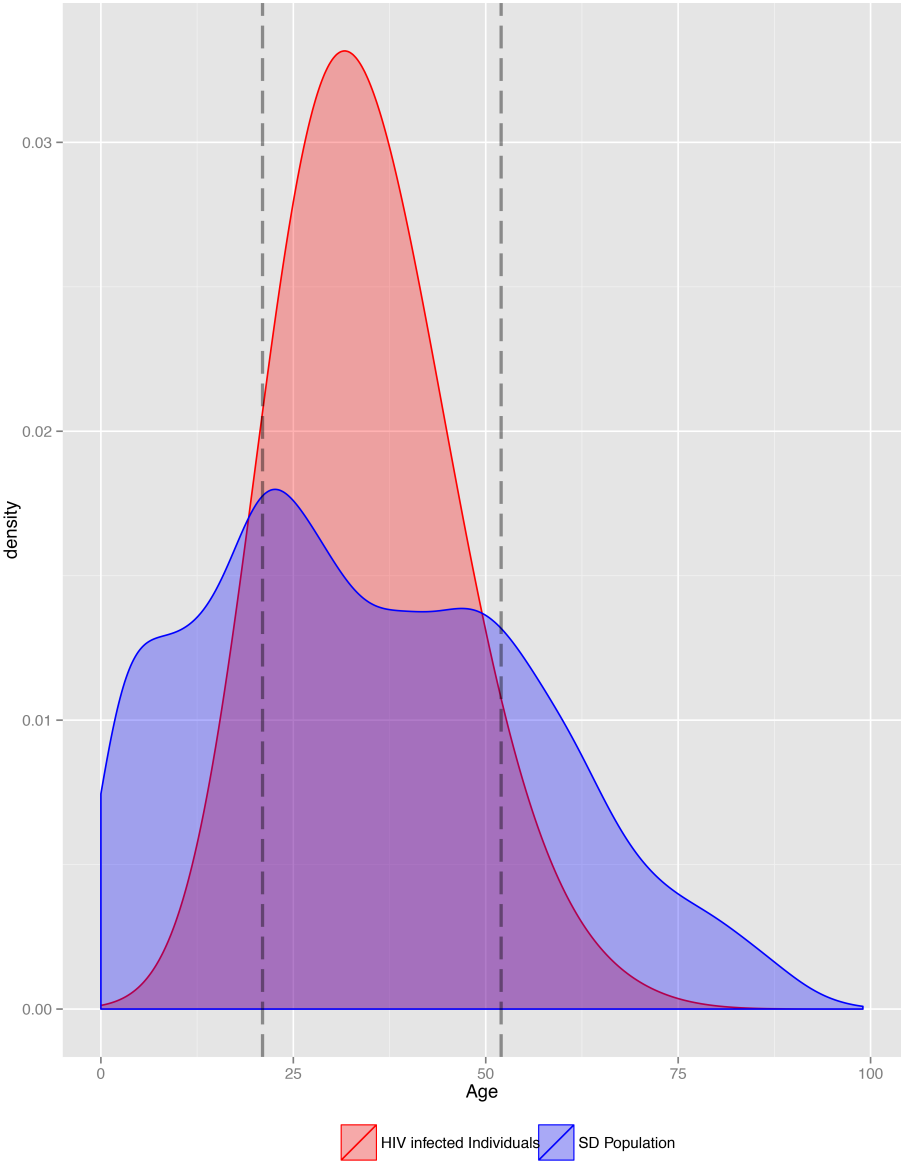
		PrEP Coverage targeted to high-risk MSM by age <sup>#</sup>					
		0%	10%	20%	30%	40%	50%
TasP Coverage	0%	0	90	180	270	362	453
	30%	535	615	696	778	860	992
	40%	687	773	853	933	1014	1095
	50%	821	917	997	1077	1157	1238
	60%	930	1038	1119	1199	1280	1362

All costs are indicated in Million USD; All estimates were made considering an initial population of 56,000, an average of 20 sex acts with casual partners per year, and an average condom use of 60%. <sup>#</sup>PrEP targeted on MSM between the ages of 21 and 52 years.

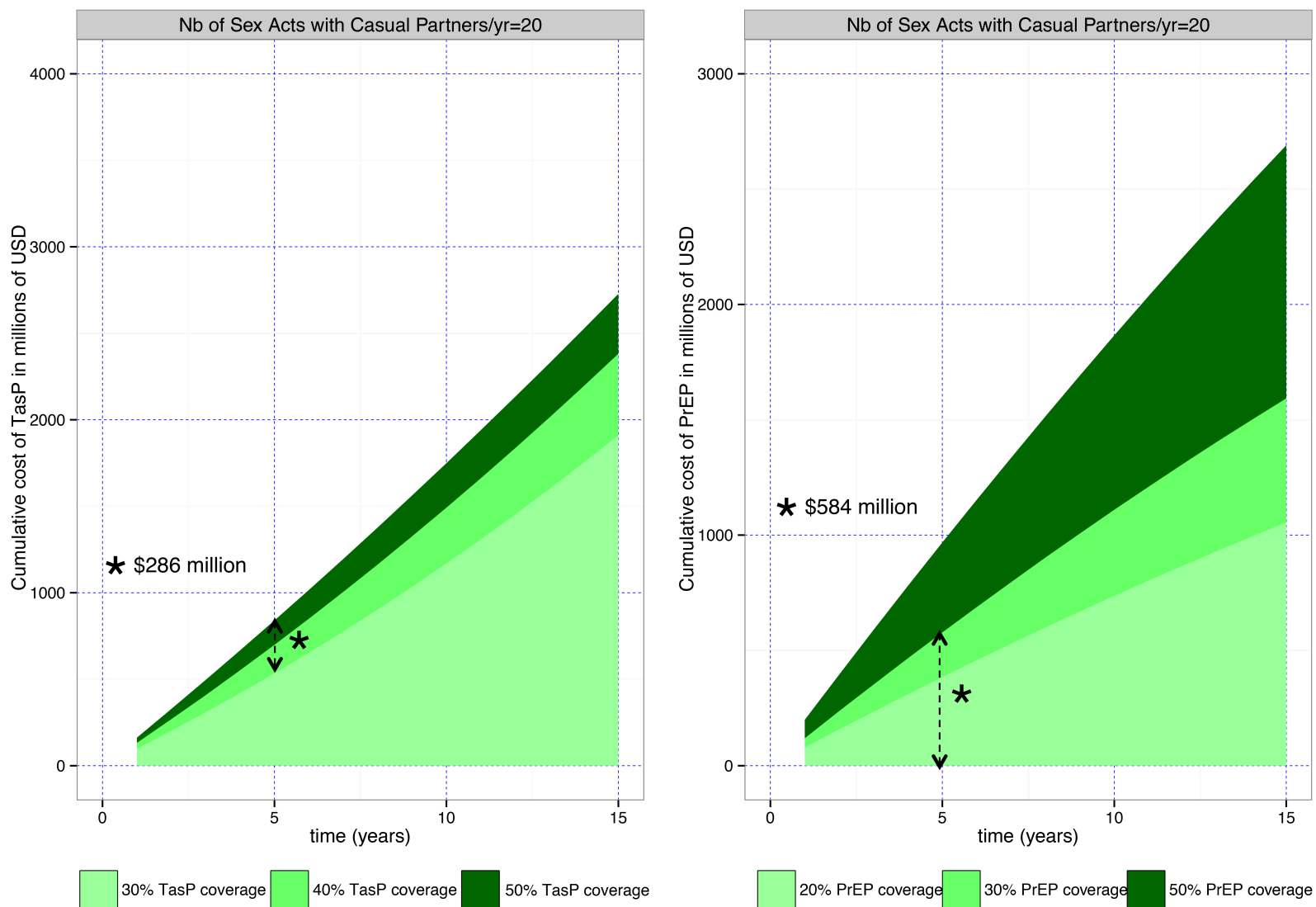
**Figure S1. Figure S1. Reported condom use among MSM in San Diego.**



**Figure S2. Age distribution of HIV incidence (red) and male individuals (grey) in San Diego.**



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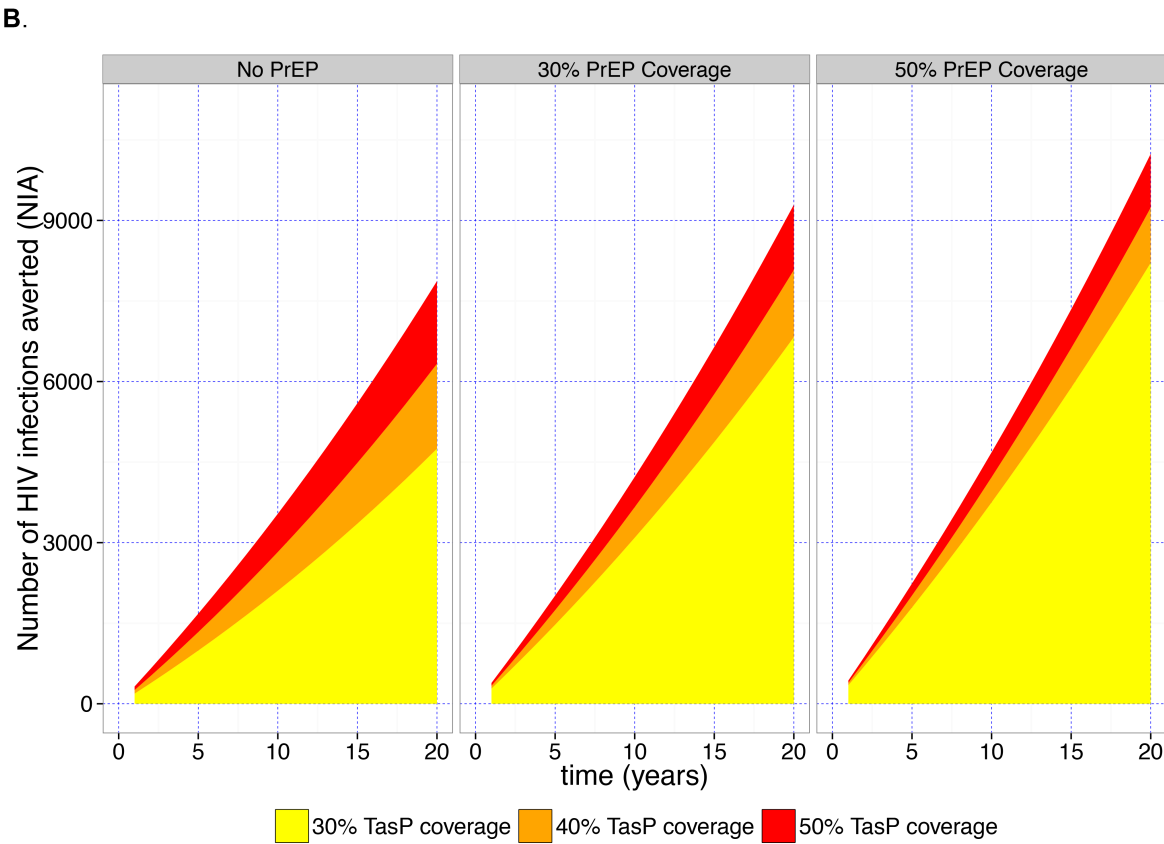
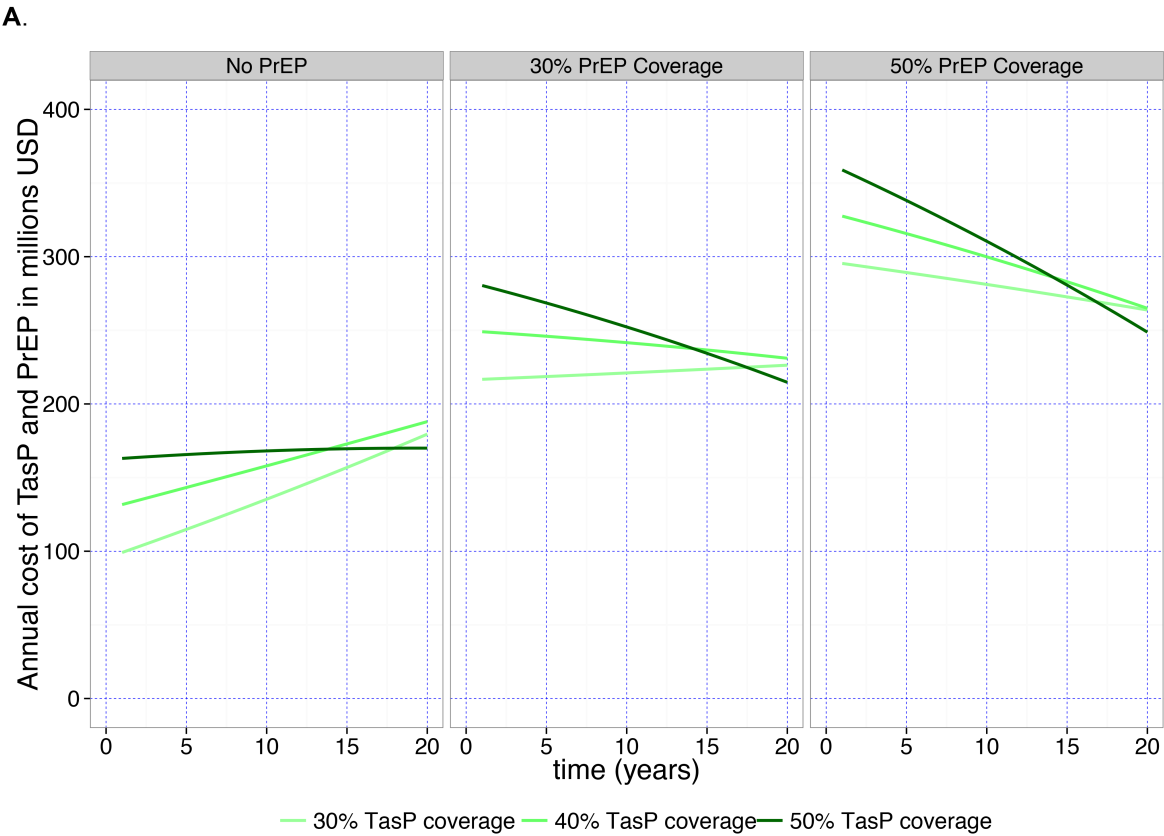


Figure S5. Cost estimates by targeting PrEP to MSM between the ages of 21 and 52 years.

